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Fisheries Report
Department of Fish and Game, Marine Region

The following is a summary of the status of select fisheries managed by the California Department of Fish and Game in 2003. This summary was presented to the 23rd Annual Fisheries Forum convened by the Joint Committee (Assembly/Senate) on Fisheries and Aquaculture, Assemblywoman Patty Berg, Chair, at the State Capital on March 17, 2004.

Abalone

Seven species of abalone are found in California: red, white, black, green, pink, pinto, and flat. Currently, only red abalone can be harvested. However, this harvest is limited to sport free-diving in northern California (north of San Francisco Bay). All abalone fishing in Central and southern California was closed in 1997 due to a dramatic decline in the populations associated with overfishing and disease.

A draft Abalone Recovery and Management Plan (ARMP) was submitted by the Department to the Commission in December 2002. This plan outlines restoration strategies for depleted abalone stocks in central and southern California and describes the management approach to be used for northern California red abalone and eventually for other recovered abalone species. The ARMP describes a stepwise adaptive approach that would allow refinements in the management of current and future abalone fisheries in the State. The Commission is now conducting a formal public review process for the plan prior to adoption. The Commission proposed holding three special meetings to receive public comment on the draft plan. Two of the proposed public meetings have already been held, the first in Monterey on November 19, 2003 and the second on February 5, 2004 in Long Beach. The third meeting is scheduled to be held in northern California in the near future.

Northern California Red Abalone

In 2002, the Commission changed the recreational daily and annual (abalone report card) limits to 3 per day and 24 per year. This was a reduction in the allowable harvest of 4 per day and 100 per year. The reduction was based on fishery trends which indicated that recent catch levels were not sustainable. Average individual catch (estimated from abalone report card data) and the total harvest effort were lower in 2002. The total effort was also lower due to reduced abalone report card sales (from 41,000 in 2001 to 36,000 in 2002). Estimates of catch or total abalone report card sales

for 2003 are not yet available; however, 2003 abalone card sales were approximately 6 percent higher than the 2002 sales. Preliminary analysis of subtidal transect surveys conducted in 2003 by Humboldt State University divers under contract by the Department indicates that red abalone populations at the heavily fished Van Damme State Park and Arena Cove are at densities sufficient to support the current recreational fishery.

Central and Southern Red Abalone

Population assessment surveys were conducted in 2003 as part of the initial task of monitoring for recovery under the draft ARMP. The recovery assessment surveys were conducted in conjunction with other established monitoring programs at the northern Channel Islands, including the Channel Islands Kelp Forest Monitoring Program and the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) program. Both programs form the foundation of the new program of monitoring for biological change within and outside of the newly established Channel Islands Marine Protected Areas. Abalone data that are collected through these monitoring programs are useful in fulfilling the goals of the ARMP. Size frequency data show that red abalone populations around San Miguel Island already meet the broad size range criterion outlined in the ARMP. Other surrounding areas at Santa Rosa and Santa Cruz Islands have not reached this first criterion specification.

In central California, sea otter predation has reduced the population of red abalone to a crevice dwelling species, with sizes far below established fishery size limits. While the population is sustainable, it remains insufficient to provide for a fishery. North of the sea otter's range in Central California and south of San Francisco Bay, red abalone populations are depressed, primarily because of past overfishing and reproductive failure.

White, Black, Pink, and Green Abalone

Recovery activities of the National Marine Fisheries Service (NMFS) White Abalone Recovery Team were limited by the lack of federal Endangered Species Act take-permits, which are necessary to conduct hands-on work. However, the White Abalone Recovery Team is developing a recovery plan, and the captive rearing program to raise cultured white abalone to adult sizes for outplanting continues. Several hundred thousand small white abalone are being raised at the Channel Islands Marine Research Institute. One assessment survey cruise was conducted in 2003 at one offshore bank using a multi-beam sonar system to map and determine white abalone habitat. After the sonar assessment, this habitat area was biologically surveyed using a Remotely Operated Vehicle (ROV).

Black abalone is a candidate species for listing under the federal Endangered Species Act. Black abalone populations in southern California have remained severely depressed since the onset of the withering syndrome bacterial disease, as well as by

fishing which depleted its population in the mid-1980s. However, recent surveys at San Nicolas Island and along the central coast near Point Arguello have revealed some evidence of recovery. NMFS has contracted the writing of a status review, which is required before listing can be considered.

A pink and green abalone survey was conducted around portions of San Clemente and Santa Catalina Islands during 2003. The size frequency distributions by recovery location indicate that the broad size range requirements specified in the ARMP were not fulfilled for either species. Based on these surveys, it appears that achieving the first criterion level of recovery, as outlined within the ARMP, will take some time.

For more information, go to the Department's Marine Region website:
www.dfg.ca.gov/mrd/armp/index.html
www.dfg.ca.gov/mrd/abalone.html

Albacore

Commercial and recreational landings of albacore decreased in 2003 from the previous year. Commercial landings decreased by 35 percent (1,695 metric tons compared to 2,602 metric tons) and commercial income decreased 31 percent ($2.59 million compared to $3.76 million). The average price per ton paid to albacore fishermen increased from $1,320 in 2002 to $2,053 in 2003.

Preliminary landing figures derived from commercial passenger fishing vessel (CPFV) logbooks for 2003 showed the fleet landed 247,891 fish, down 21 percent from the record high catch of 312,776 albacore landed in 2002. Seventy-eight percent of the 2003 catch was from Mexican waters. The Marine Recreational Fisheries Statistics Survey (MRFSS) offers a different view of albacore catches in that it only includes fish taken in waters of the United States. This survey showed albacore landings for CPFV and private boat anglers increased from the previous year. An estimated 130,000 albacore were landed in 2003 while the final 2002 estimate was 99,000 fish. The average weight of all albacore sampled by MRFSS field personnel showed an increase of 2.8 kilograms (10.2 kg compared to 7.4 kg) from 2002.

During March 2004, the National Marine Fisheries Service approved the Highly Migratory Species Fishery Management Plan (HMSFMP), which includes albacore along with other tunas, sharks, billfishes, swordfishes and other species. The Pacific Fishery Management Council (PFMC) adopted the HMS FMP at their June 2003 meeting. Presently, the north Pacific albacore stock is healthy and is not being overfished. Stock size and catches are increasing as the high productivity regime, first noted three years ago, continues. The PFMC is not considering implementing restricted access or quota management at this time.

For more information, go to the Pacific Fishery Management Council's website: www.pcouncil.org/hms/hmsback.html

California Recreational Fisheries Survey

In response to fishery managers' and constituents' concerns over the use of the Marine Recreational Fisheries Statistics Survey (MRFSS) for making in-season management decisions, the California Department of Fish and Game (Department) and the Pacific States Marine Fisheries Commission (PSMFC) have developed and are implementing a new method of estimating total saltwater recreational catch and effort in California.

Beginning in January 2004, the Department and PSMFC began the California Recreational Fisheries Survey (CRFS). This is a single, coordinated program that will sample recreational anglers in both boat (private boats, rental boats and party/charter boats) and shore (pier, jetty, beach and bank) modes of fishing. The CRFS program incorporates many changes and improvements over the existing MRFSS program. These improvements include increased sampling, on-site estimates of private skiff effort, grouping of trips by target species, placing emphasis on species of concern, dividing the State into smaller geographic regions, and utilizing an angler-license database for effort estimates. The CRFS program will provide more accurate and timely information on which fishery managers can base sound and effective decisions.

As a result of the increased levels of sampling, recreational anglers and divers are more likely to encounter Department/PSMFC representatives conducting the CRFS. Avid anglers may be approached several times per year. Angler cooperation is critical to the success of the survey, and all are encouraged to take the time to participate. Every fishing trip is different, so even if an angler has completed the survey before, cooperation each time an angler is asked is essential to the success of the program.

The Department is also asking for angler cooperation in establishing the angler-license data base. One in twenty anglers will be asked to provide their names and telephone numbers at the time of license purchase so they can be contacted later. It is anticipated that only one angler in a hundred will be contacted to provide fishing information on the previous month's fishing activity.

Channel Islands Marine Protected Areas

On April 9, 2003 a network of 12 new Marine Protected Areas (MPAs), adopted by the Commission in October 2002, was implemented in the northern Channel Islands. The MPAs form the State waters portion of a joint State/Federal proposal. The Channel Islands National Marine Sanctuary (Sanctuary) and National Marine Fisheries Service (NMFS), in consultation from the Pacific Fishery Management Council, are currently

undertaking the Federal rulemaking process to complete the Federal waters portion of the proposal.

Enforcement and monitoring are critical elements of management and evaluation of MPAs at the Channel Islands. To support these functions, the Department has made several staff and vessel assignments. The patrol boat *Swordfish*, based in Ventura, is dedicated to island patrol at the Channel Islands. The patrol boat *Thresher*, based in Dana Point, assists with island patrols. Both vessels are part of the Department's fleet of highly effective 54-foot Technicraft vessels dedicated to on-water enforcement along the California coast. A 32-foot rigid hull inflatable vessel stationed in Santa Barbara provides additional coverage. The Department and the National Oceanic and Atmospheric Administration (NOAA) have a Memorandum of Understanding in place for cooperative enforcement. The Department, the Sanctuary, and Channel Islands National Park (CINP) are working closely in the field to ensure adequate enforcement. The Sanctuary will contribute staff time, vessels, an airplane and funds to support on-water enforcement. The CINP has rangers present on the islands and vessels that will also be an important part of effective enforcement.

At the Commission's request the Department has drafted a comprehensive monitoring plan for the Channel Islands MPA network. Research, monitoring and evaluation are essential activities that provide information on the effectiveness of these MPAs. Scientific staff are assigned to work directly on Channel Islands issues, including overall research and monitoring coordination; scientific liaison and coordination; habitat mapping; and kelp, nearshore, and urchin/abalone monitoring. The 45' research vessel *Garibaldi* has been relocated from Los Angeles to Ventura to support diving and other surveys in the area.

As a first step to develop the monitoring plan, a joint biological/socioeconomic monitoring workshop was held March 14-16, 2003 in Santa Barbara. Workshop participants included a broad array of scientists, fishermen, environmental groups, and others. The primary workshop goal was to develop recommendations for a preliminary monitoring plan. These recommendations were compiled and presented to the Commission at its April, 2003 meeting.

Based on those recommendations and a review of existing programs and available resources, preliminary monitoring occurred during the spring, summer and fall of 2003. Partnerships with the University of California, CINP, Sanctuary, and other groups significantly increased the Department's abilities to conduct monitoring activities. These preliminary efforts provided information on the amount and type of monitoring that could reasonably be accomplished each year. Using this information the Department prepared the final draft Monitoring Plan and presented it to the Commission at its February 2004 meeting. The plan details the biological and socioeconomic monitoring activities that will occur annually and lists other activities that could enhance

monitoring given additional staff and funds.

For more information, see the Department's Marine Region website:
www.dfg.ca.gov/mrd/channel_islands/index.html

Dungeness Crab

Dungeness crab landings for the 2002-03 season totaled 13.8 million pounds with the total landing value exceeding $22.5 million dollars. The 2002-03 season had the highest landings since the 1995-96 season and represented the first time the total surpassed 10 million pounds in the last four years. The average statewide price per pound for Dungeness crab dropped to $1.91, a decline of 23 cents from the prior season. However, the price remained above the 10-year average of $1.75 per pound. The central coast fishery began on the November 15th opening date with a starting price set at $2.22 per pound. The Northern California season was delayed due to a fishermen-lead strike over price, which was lowered because of the high volume of crab landed in the central coast the previous month. The northern season finally got underway 22 days after the official opening date (December 1) with an agreed price per pound of $1.40. Towards the end of the season, the price briefly rose to over $3.50 a pound. However, because of the high volume of crab available, 63 percent of the catch was purchased at under $2.00 per pound. There were 400 vessels that made landings during the 2002-03 California season, up slightly from the 385 boats that fished the previous season.

Keeping with the historical landing trend, Fort Bragg, Eureka, and Crescent City consistently land the majority of Dungeness crab in the California despite the delayed opening. During the 2002-03 season, nearly 70 percent of all landings were from the northern ports. Boats fishing out of northern ports are generally larger than vessels to the south and are able to deploy more traps per trip, fish at night, and withstand rougher seas. In the last few years several of these larger vessels have traveled south to participate in the southern opener on November 15. This relatively new trend has caused concern with some in the industry that too many traps are being deployed on fishing grounds at one time, especially in central California waters. Legislation proposed by the industry to address this and other fishery related concerns is pending.

For more information, go to the Department's Marine Region website:
www.dfg.ca.gov/mrd/dungeness_crab.html

Groundfish

More than 80 species of bottom-dwelling marine fishes are included in the Groundfish Fishery Management Plan (FMP) implemented by the Pacific Fishery Management Council (PFMC). Species and species groups managed under the FMP

include all rockfishes (about 60 species); sablefish; thornyheads; lingcod; Dover sole and other flatfishes; Pacific whiting; and some sharks and rays. During 2003, California commercial groundfish landings totaled 10,553 metric tons, worth $14.7 million ex-vessel. This was a decline of about 1,700 metric tons and $1.4 million from 2002. In addition to the commercial catch, an estimated 1.7 million marine anglers caught 3,100 metric tons of groundfish during 2003, up from 2,000 metric tons in 2002.

To date, 17 rockfish populations have been assessed, and the results remain discouraging. Nearly all of these species are currently below optimal abundance levels. Several species important to both California recreational anglers and commercial fishermen (bocaccio, canary, yelloweye, widow, and cowcod rockfishes) are estimated at or below 25 percent of unexploited population size and are considered to be "overfished". Federal guidelines require that steps be taken to rebuild overfished stocks under strict requirements that place an emphasis on achieving rebuilding targets within specified time periods for each species. Some species, such as bocaccio, seem to be responding favorably to the rebuilding measures, but the rebuilding process for most overfished rockfish species is expected to require many years or even decades to reach healthy population levels. A recent lingcod stock assessment indicates the coast-wide population is more abundant than previously thought and near the level that would remove the stock from the overfished designation.

Strict new regulations governing the harvest of groundfish went into effect beginning January 1, 2003 and were continued for 2004. Management measures, primarily addressing the rebuilding needs for bocaccio, canary, darkblotched, and cowcod rockfish stocks, have had a drastic effect on both recreational and commercial fishing opportunities. While previous management approaches also focused on rebuilding these stocks, conservation measures over the last several years were not satisfying the requirements identified in the recovery plans, and therefore more restrictive regulations were required. Unlike groundfish management in the past, many non-groundfish fisheries are being affected by increased restrictions on fishing seasons, open areas, and fishing gears to help rebuild these overfished rockfishes.

The commercial groundfish catch can widely vary in species, fish size and overall catch volume. In addition to the landed catch, a portion of the catch is discarded at sea due to species restrictions, size limits, or quota limits. Managers need information on discard rates for each species, and one of the best ways to accurately estimate the amount of discarded catch is through at-sea observer programs. Consequently, in 2001 the West Coast Groundfish Observer Program was established. This program requires all trawl vessels that participate in the groundfish fishery to carry an observer when notified to do so by the National Marine Fisheries Service (NMFS). The goal of the program is to improve estimates of total catch and discarded catch. Results from this program have been successfully used for current management decisions, and the program may be expanded to include non-trawl vessels in the fleet.

In response to the generally poor condition of the stocks and the resulting economic impact to the fishing industry, California established a Groundfish Disaster Relief Program supported primarily by federal funds. It consisted of three projects: reimbursement for safety equipment, enhancement for data collection, and a groundfish disaster/job re-training stipend. Research projects included a nearshore rockfish tagging study and testing of a non-lethal assessment technique for cowcod rockfish using a Remotely Operated Vehicle (ROV). About $2.5 million in federal and State funds have been allocated to aid displaced workers and vessel owners in California. Job retraining stipends account for approximately $1.2 million of this; stipends may total up to $1,500 per month to qualifying individuals.

The groundfish fishery is overcapitalized, with too many vessels fishing for a limited allowable catch; this has made it difficult to establish effective management measures that provide for a profitable fishery while also protecting groundfish stocks from overfishing. A federally sponsored buyback program has just concluded and has reduced the number of groundfish trawl permits by approximately 35 percent, which should help address this issue.

For more information, go to the Department's Marine Region website:
www.dfg.ca.gov/mrd/groundfish_drp/index.html
www.dfg.ca.gov/mrd/groundfish_fedlist.html
www.dfg.ca.gov/mrd/bfregs2004.html

Market Squid

Market squid is one of the largest fisheries by volume and is believed to be one of the State's most abundant living marine resources. Statewide landings in 2003 were estimated at 38,843 metric tons with an ex-vessel value of approximately $22.8 million. This is a 47 percent decrease from 2002 (72,878 metric tons), and a 67 percent decrease from the record high of 118,914 metric tons in 2000. However, ex-vessel value increased by 25 percent from 2002 ($18.3) due to strong international demand for California squid. The average price for squid doubled from $0.14 per pound in 2002 to $0.28 per pound in 2003.

Most fishing for squid occurs at the Channel Islands of southern California (southern fishery) and in the Monterey Bay region of central California (northern fishery). The southern fishery season operates during the fall and winter while the northern fishery season takes place during the spring and summer. In 2003, the northern fishery landed 45 percent of the statewide catch; this is unusual since it has made less than 25 percent of the catch in the last 20 years. In addition, northern landings decreased 34 percent from the record northern fishery landings in 2002

(26,292 metric tons). It appears that the smaller catches in the southern fishery may have been the result of warm water conditions in 2002 and 2003.

In 2003, the Department provided the draft Market Squid Fishery Management Plan for review and comment by the public. The Commission will consider adoption of the management plan in the summer of 2004, with implementation in the 2005-06 fishing season.

For more information, go to the Department's Marine Region website: www.dfg.ca.gov/mrd/marketsquid/index.html

Marine Life Protection Act Process

The Marine Life Protection Act (MLPA) requires the Department to develop a master plan for Marine Protected Areas in California. This plan must include information on specific site recommendations, implementation and phasing, funding, monitoring, enforcement and management. The MLPA contains specific goals for MPAs including, but not limited to, ecosystem protection, protecting representative habitats, helping sustain populations, improving the existing array of MPAs, and ensuring that the new system functions, to the extent possible, as a network.

In July 2002, orientation meetings were held in southern, central, and northern California for seven constituent Working Groups established to provide input on the MLPA master plan. The orientations were followed by two sets of individual Working Group meetings held between September 2002 and January 2003. The meetings focused on establishing operating principles, discussing individual member's views of the future of marine resources, and beginning to review the existing array of State MPAs.

The Working Group process was funded through private grants administered by the National Fish and Wildlife Foundation. This funding allowed the Department to establish the groups and provide an independent neutral facilitator and process support for the meetings. Other funding needs include support for scientific review and analysis of options, technical support for the Working Groups, and socioeconomic data collection. By mid-January 2003, the external grants had been exhausted.

During 2003 the Department assessed the funding situation, sought additional funds, and examined a variety of potential processes to allow the Working Groups to continue. The Marine Region, faced with significant staff reductions and budget constraints, expressed concerns about its ability to manage a process of this extent. In January 2004 the Department announced that the Working Groups would be disbanded until sufficient funds and staff are available to provide adequate support.

For more information, go to the Department's Marine Region website: www.dfg.ca.gov/mrd/mlpa/index.html

Nearshore Fishery

In 2003, the Department took further steps to implement the Nearshore Fishery Management Plan (NFMP). The first formal stock assessment for a nearshore species (cabezon) was undertaken for use in management; that assessment is currently being revised. The Fish and Game Commission (Commission) adopted revised statewide Optimum Yields (OYs) for each fishery sector, but will wait to develop regional allowable catches until better data become available. The Commission revised a previous allocation of nearshore species established in 2000, giving a greater share of future catches to the recreational sector. Nearshore fishery regulations continued to be guided by the need to provide maximum fishing opportunities while minimizing impacts on overfished species such as bocaccio, canary, and yelloweye rockfishes and lingcod. Progress continued on implementing the commercial nearshore restricted access program.

2003 Accomplishments

- The Department successfully monitored the commercial take of State-managed nearshore fish stocks (cabezon, sheephead, and greenlings or "CGS") for fishery closures that kept harvests within established OYs. The sheephead OY was exceeded slightly due to incomplete landing information.

- The nearshore fishery restricted access program is designed to better match the number of participants to current allowable harvests of nine species in the NFMP. The number of permittees was 1,100 statewide in 1999 and was reduced to 276 qualifying regional permittees in 2003, removing much of the latent capacity in the fishery.

  In addition, gear endorsements are now required to control the use of trap gear. Permit appeals are ongoing and have resulted in an additional 32 permits being issued. The current number of permits total 308 statewide, including permits granted on appeal and permit transfers.

- The deeper nearshore fishery permit is now required for the take of black, blue, brown, calico, copper, olive, quillback and treefish rockfishes. Though the Department determined 1,320 individuals were eligible for the permit, only 270 were purchased, including 14 permits granted upon appeal. Low trip limits for the deeper nearshore rockfish in 2004 may have discouraged individuals from purchasing a permit.

- The National Marine Fisheries Service (NMFS) conducted stock assessments for black rockfish and cabezon. Department staff provided data as well as technical expertise to stock assessment biologists.

- The Commission aligned the commercial CGS fishing seasons so that open and closed periods match the shallow and deeper nearshore rockfish commercial seasons in each geographic region. This strategy of aligning the CGS seasons with that of nearshore rockfish has been a consistent practice of the Commission in regulatory actions since 2002, based on concerns for bycatch of rockfish that would occur in targeted CGS fisheries if rockfish were prohibited from retention at that time.

- In August 2003, the Commission adopted several changes to CGS management, including trip limits that are intended to slow the take and to spread out effort over the fishing year. Weekday fishing closures for CGS were lifted, providing fishermen with more flexibility in their fishing operations and eliminating concerns regarding bycatch of CGS when fishing for other nearshore species during the closures. The Commission adopted revised allocations that provide more catch to the recreational sector.

2003 Challenges

- The Department delayed requesting transfer of management authority from the Pacific Fishery Management Council (PFMC) for the 13 species of rockfishes, California scorpionfish, cabezon and rock greenling. The State continues to be highly involved in management and regulation for these species through Commission and PFMC actions.

- When the nearshore recreational fishery opened in July 2003, anglers were restricted to waters less than 120 feet in depth, increasing effort on nearshore species. As a result, when catch estimates were finally available, the recreational sector had exceeded both their allocation and the overall OY, causing the closure of both the recreational and commercial nearshore fisheries. The new CRFS monitoring program should help address timeliness of catch data for management actions.

For more information, go to the Department's Marine Region website:
www.dfg.ca.gov/mrd/nfmp/index.html

Pacific Herring

California's sac-roe Pacific herring fisheries are limited to the four largest spawning locations: San Francisco Bay, Tomales Bay, Humboldt Bay, and Crescent City Harbor. San Francisco Bay has the largest herring spawning stock south of British Columbia. The long-term average spawning biomass for the San Francisco Bay spawning population is approximately 91 million pounds. Annual catch quotas are based on spawning population estimates, age structure analysis, and up-to-date oceanographic information.

California herring sac-roe landings for the 2002-03 season totaled 4.8 million pounds (58 percent of the quota was caught), valued at an estimated $1.6 million. This is a decrease in landings from the 2001-02 season when 7.4 million pounds were landed. The landings decrease is a reflection of lower quota levels set for the 2002-03 San Francisco Bay fishery, based on the 2001-02 estimated spawning biomass. The San Francisco Bay fishery historically produces more than 90 percent of California's herring catch.

Another facet of California's herring industry is the herring-eggs-on-kelp fishery. Currently, giant kelp is harvested from the Channel Islands off southern California and from the Monterey Bay area, brought to San Francisco Bay and suspended from floating rafts or lines hung beneath piers. Rafts are positioned in locations where herring spawning is expected to occur and then anchored. Once spawning has commenced, suspended kelp is left in the water until egg coverage is sufficient, when the kelp with herring eggs attached is harvested. Landings from the 2002-03 eggs-on-kelp fishery were an estimated 106,562 thousand pounds, valued at an estimated $400,000 dollars.

For the 2003-04 season, the Department had recommended to the Commission that the commercial herring fisheries in San Francisco Bay be closed. This recommendation was based on concerns regarding the current status of the San Francisco Bay herring stock. Department data, collected on the San Francisco Bay herring population over the last 30 years, indicated a substantial decline of the older age classes within the population. Additionally, the Pacific herring spawning biomass within San Francisco Bay has been well below the long-term average since the El Niño event of 1997 and there had been no strong recruitment (reproductive) events in the last 10 years. These data were subject to a scientific peer review process, administered by California Sea Grant. The findings of this peer review indicated that the San Francisco Bay herring population has been reduced to a level of roughly 20 percent of the un-fished level and is presently at or near the lowest abundance observed since the early 1970s.

In addition to recommending a fishery closure, the Department provided an alternative for the Commission to consider which allowed for the fishery to remain open with a reduced quota and shortened season. The Commission adopted this alternative, keeping the fishery open for the 2003-2004 season.

For more information, go to the Department's Marine Region website: www.dfg.ca.gov/mrd/herring/index.html

Salmon

The Pacific Fishery Management Council's (PFMC) Salmon Fishery Management Plan (FMP) was developed in 1977 and was the first FMP implemented by that organization. Each year the PFMC develops management measures that establish fishing areas, season dates, harvest quotas, legal fishing gear, minimum size lengths, and possession and landing restrictions for salmon taken in federal and State waters off California, Oregon and Washington. These measures must meet the goals of the FMP that address spawning escapement needs, allow for freshwater fisheries, and meet the needs of salmon species listed under the federal Endangered Species Act (ESA). The ESA requires that the National Marine Fisheries Service (NMFS) assess the impact of ocean fisheries on listed salmon populations and develop standards that avoid the likelihood of jeopardizing the continued existence of those populations. Measures recommended by the PFMC must be approved and implemented by the Secretary of Commerce. The Commission must also adopt these regulations for State waters.

Ocean salmon fisheries harvest a mixture of stocks that can differ greatly in their respective abundance and productivity. Managers develop measures that selectively protect stocks of concern based on differences in life history and distribution by time and area of "strong" and "weak" stocks. The Commission, the PFMC, and the NMFS have implemented various protective regulations to reduce fishery impacts on populations of Central Valley winter and spring Chinook, and California coastal Chinook and Coho. All of these stocks are listed under both federal and State ESAs. Ocean harvest of Chinook must also be constrained to meet the spawning escapement goal of Klamath River fall Chinook and to provide for the federally reserved fishing rights of the Yurok and Hoopa Valley Indian tribes.

Of the five species of Pacific salmon found on the West Coast, Chinook and Coho are most frequently encountered off California. Small numbers of pink salmon are landed on occasion. Chum salmon and sockeye salmon are rarely seen in California.

In 2003, commercial fishing opportunities for ocean salmon (all species except Coho) were expanded off the coast of California as a result of the forecasted abundance of Klamath River fall Chinook, the NMFS 2002 biological opinion for

Sacramento River winter Chinook, and the implementation of a new Klamath Ocean Harvest Model developed by the Department and NMFS. In 2003, for the first time in many years, a nearly complete commercial fishery was allowed in the Fort Bragg area with only the month of June closed and a portion of the July fishery conducted under a landing limit. Commercial fisheries were also allowed from May through September from Bodega Bay southward, and there was an October fishery off San Francisco to target Central Valley fall Chinook.

Statewide commercial landings in 2003 increased by 27 percent despite a 10 percent decrease in fishing effort as compared to the previous year. The commercial fleet landed 2,883 metric tons of dressed Chinook (488,800 fish) for 15,600 days fished in 2003 compared to 2,271 metric tons of dressed Chinook (391,700 fish) for 17,300 days fished in 2002. Ex-vessel prices for dressed salmon averaged $1.90 per pound, and the total ex-vessel value of the commercial fishery was approximately $12.1 million.

Recreational fishing restrictions to protect Sacramento River winter Chinook included a two-week delay in the opening of the season and a minimum size limit of 24 inches through April 30 and 20 inches thereafter south of Point Arena. Regulations in 2003 were similar to those in 2002. The season ran from February 15 through November 16, with various time and area closures. Anglers were limited to two salmon per day (all species except Coho). Anglers fishing by any means other than trolling in the area between Point Conception and Horse Mountain were restricted to two barbless circle hooks.

Statewide recreational landings decreased by 49 percent in 2003 and effort decreased by 37 percent as compared to the previous year. This decline in landings and effort was due to a shift in the salmon distribution to offshore areas not accessible to the recreational fleet. Recreational anglers landed a total of 93,100 Chinook during 132,300 angler-trips in 2003 compared to 182,000 Chinook during 210,100 angler-trips in 2002.

The PFMC Fishery Economic Assessment Model (FEAM) estimated that California coastal community and State personal income impacts of the 2003 ocean salmon fishery exceeded $43 million, with $30.3 million from the commercial fishery and $13.3 million from the recreational fishery. This is a slight increase from the 2002 FEAM estimate of $41 million, with $20.9 million from the commercial fishery and $20.1 million from the recreational fishery.

For more information, go to the Department's Marine Region and the PFMC websites:
www.dfg.ca.gov/mrd/oceansalmon.html
www.pcouncil.org/salmon/salsafe03/salsafe03.html

Sea Urchins

Statewide landings of sea urchins in 2003 were estimated at 10.4 million pounds, with an ex-vessel price of $7.3 million. This represents a decline of 3.5 million pounds from the previous year primarily in the north coast fishery. Environmental and market conditions account for the large decline. In northern California, the urchin spawning period extended longer than normal. The extended spawning period combined with a lack of kelp, the urchin's food source, produced poor urchin roe quality. The low price per pound received for poor quality urchins forced northern California commercial divers to seek other employment. Kelp was plentiful in southern California, but the market demand was still limited.

New regulations went into effect in the fall of 2003, eliminating the landing requirement for permit renewal and relaxing the closure schedule. Both changes benefit the resource by avoiding unnecessary harvest during short open fishing periods when market demand is low, or to meet a required number of landings.

The Sea Urchin Fishery Advisory Committee (SUFAC) continued to support urchin resource research by funding Dr. Stephen Schroeter's long term brush studies of sea urchin recruitment. The SUFAC also funded stage one of an urchin survey contract with two noted fishery scientists. The goal of this contract is for the industry to provide its own science coordinator and fishery data to assist the Department with resource management decisions. This is an innovative approach that involves fishermen in data collection and implementation and provides the Department with critical assistance. Other fisheries are interested in the outcome and potential applications of similar approaches.

For more information, go to the Department's Marine Region website:
www.dfg.ca.gov/mrd/seaurchin/index.html